PRELIMINARY REMARKS

Introduction

Claims 1-27 were pending in the above-identified patent application. The specification has been amended to include a cross-reference to a related application. Applicants have amended claims 1 and 15. Applicants have added new claims 28-33. Applicants have cancelled claims 5-14 and 19-27 without prejudice.

Because claims 1-4 and 15-18, as amended, are based on cancelled claims 1-4 and 15-18 from the parent application (U.S. Patent Application No. 09/443,971, filed November 19, 1999, now U.S. Patent No. 6,658,564) (hereinafter referred to as "the parent application"), applicants will address the Examiner's rejections of claims 1-4 and 15-18 stated in the Office Action mailed on November 19, 2002 for the parent application.

Reconsideration of this application in light of the following remarks is hereby respectfully requested.

Claims 1-4

Claims 1-4 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Robinson U.S. Patent No. 5,068,823 (hereinafter "Robinson"). Applicants have

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amended claim 1 to more particularly define the invention. No new matter has been added and the amendment is fully supported and justified by the specification (see, e.g., page 13, lines 5-8 and 29-31). The Examiner's rejections are respectfully traversed.

Applicants' invention, as defined by independent claim 1, relates to a reconfigurable computer system having programmable logic resources such as programmable logic devices. At least one of the programmable logic resources is used to implement a central processing unit. The remaining programmable logic, which may include one or more portions of one or more programmable logic resources, may be configured to execute a given application. A secondary storage device is used to hold configuration data for the programmable logic. The configuration data may, for example, be stored in the secondary storage as a result of virtual logic management, whereby configuration data is swapped in and out of the programmable logic and is temporarily stored in the secondary storage.

Robinson refers to an apparatus that "serve[s] as the equivalent of an integrated circuit chip, and/or as a building block for a large system ... [and is] ... capable of being programmed to perform a multitude of

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useful functions..." (Robinson, col. 2, lines 8-26).

The Examiner contends that Robinson anticipates the reconfigurable computer system of applicants' claim 1. In particular, the Examiner contends that Robinson shows a "secondary storage device that stores configuration data for the programmable object [col. 8, lines 48-52; data can be stored in the host processor or an associated non-volatile memory]" (Office Action mailed on November 19, 2002 for the parent application, page 2, paragraph 4).

Contrary to the Examiner's contentions, applicants respectfully submit that Robinson fails to show or suggest "a secondary storage device that stores configuration data for the programmable logic" (Claim 1). Instead, Robinson shows using only primary storage. Primary storage and secondary storage, terms that are well-known in the art, are distinct types of storage. Primary storage is memory that includes random access memory (RAM), read-only memory (ROM), programmable ROM (PROM), erasable programmable ROM (EPROM), and registers. Secondary storage includes mass storage devices such as magnetic disk drives. Primary storage is, as a general rule, faster than secondary storage with respect to both seek and access times. For a computer to access data in

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secondary storage, the data is typically first copied

into primary storage from where the processor may

directly access the data.

According to Robinson, topological and

parametric data are stored in different types of memory

including external memory, nonvolatile memory (i.e.,

EPROM), and volatile memory (i.e., RAM), all of which

constitute primary storage (Robinson, col. 2, lines 34-

46; and col. 4, lines 17-30). Applicants respectfully

submit that at the time Robinson was filed (i.e., prior

to July 11, 1988), a person of ordinary skill in the art

would infer that external memory, nonvolatile memory, and

volatile memory, as used in the context of Robinson,

refer only to primary storage and not to secondary

storage. Thus, Robinson does not show or suggest using a

secondary storage device as recited in applicants'

independent claim 1.

For at least the foregoing reason, claim 1 is

in condition for allowance. Claims 2-4, which depend

from claim 1, are also in condition for allowance.

Claims 15-18

Claims 15-18 have been rejected under 35 U.S.C.

§ 103(a) as being unpatentable over Robinson in view of

Wong et al. U.S. Patent No. 6,282,627 (hereinafter
"Wong"). Applicants have amended claim 15 to incorporate
the features of cancelled claim 19. The Examiner's
rejections are respectfully traversed.

Applicants' invention, as defined by
independent claim 15, relates to managing resources in a
reconfigurable computer that contains programmable logic
resources. A virtual logic manager manages the swapping
of configuration data between a secondary storage device
and the programmable logic resources.

Wong refers to a reconfigurable computer that
"offers the flexibility of software development and the
performance of dedicated hardware solutions" (Wong,
col. 2, lines 38-41). Configuration data bits are
organized in multiple planes of storage (i.e.,
configuration planes) within a memory structure and can
be swapped among differing configuration planes on a
selectable basis (Wong, col. 4, lines 52-55; and col. 7,
lines 37-38). Different functions can be associated with
each configuration plane. For example, "function"
configuration data and "wire" configuration data can be
stored in different planes, another plane can provide
external access to a memory stack, and yet other planes
can function as a configuration stack that stores

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configurations that are expected to be used but are not presently active (Wong, FIG. 12a; and col. 6, lines 47-59).

The Examiner has stated that Robinson does not show or suggest "swapping configuration data." In addition, for at least those reasons discussed above with respect to applicants' claims 1-4, Robinson fails to show or suggest anything related to storing configuration data in secondary storage.

Contrary to the Examiner's contentions, applicants respectfully submit that Wong fails to show or suggest "swapping configuration data between a secondary storage device and the programmable logic resources" (Claim 15). Instead, Wong refers to swapping configuration data between configuration planes and not between a secondary storage device and programmable logic resources (Wong, col. 4, lines 52-55; and col. 7, lines 37-38). In fact, Wong fails to show or suggest anything related to storing configuration data in a secondary storage device. Wong only refers to using memory (i.e., primary storage) for storage (Wong, col. 4, lines 4-6; col. 5, lines 56-59; and col. 6, line 47 to col. 7, line 13).

Therefore, whether taken alone or in

combination, Robinson and Wong fail to show applicants'

claimed invention as defined by independent claim 15.

Moreover, applicants respectfully submit that

the Examiner has failed to point to any suggestion or

motivation in either Robinson or Wong or in the knowledge

generally available to one of ordinary skill in the art

to combine Robinson with Wong. Instead, the Examiner

merely concludes that it would have been obvious to

combine Robinson with Wong and that the teaching of Wong

will add value to the teaching of Robinson as one will be

benefited by the swapping of configuration data:

> "… it would have been obvious to one of
> ordinary skill in the art at the time the
> invention was made to combine the cited
> references as both are directed to programmable
> circuit devices or re-configurable computing.
> Moreover, teaching of Wong et al. will add
> value to the teaching of Robinson, as one will
> be benefited with the knowledge of swapping
> configuration data by eliminating a need of
> extra storage area for configuration data."

(Office Action mailed on November 19, 2002 for the parent

application, page 4, paragraph 3). Without objective

evidence of a suggestion or motivation to combine, the

Examiner's obviousness rejection is based on improper

hindsight.

Because neither Robinson nor Wong, nor the

combination of Robinson and Wong recite each of applicants' claimed features, and because the Examiner has failed to point to any suggestion or motivation for modifying Robinson with Wong, applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness (MPEP § 2142).

For at least the foregoing reasons, claim 15 is in condition for allowance. Claims 16-18, which depend from claim 15, are also in condition for allowance.

Claims 28-33

Applicants respectfully submit that new claims 28-33 are allowable at least because nothing in the known prior art shows or suggests determining, at run-time, whether to use a software implementation or a hardware implementation for a given function of an application.

Conclusion

Applicants respectfully submit that this application is in condition for allowance. Accordingly, prompt consideration and allowance of this application are respectfully requested.

Respectfully submitted,

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